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Real Party in Interest

The present application has been assigned to International Business Machines Corporation, Armonk, New York.

Related Appeals and Interferences

Applicant asserts that no other appeals or interferences are known to the Applicant, the Applicant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-8 and 10-16 are pending in the application. Claims 1-16 were originally presented in the application. Claims 1-8 and 10-16 stand finally rejected as discussed below. The final rejections of claims 1-8 and 10-16 are appealed. The pending claims are shown in the attached Claims Appendix.

Status of Amendments

All claim amendments have been entered by the Examiner. No amendments to the claims were proposed after the final rejection.

Summary of Claimed Subject Matter

Claimed embodiments of the invention provide methods for adding storage space to a server without powering down the server is provided. (§ [0006].) The methods provide for the storage space to be added without requiring installation of special hardware or physically installing additional storage devices to the server, and the method is simple to perform and fast in execution. *Id.*

One claimed embodiment provides a method for dynamically linking a storage space to a network server. (§ [0018] and Fig. 2A-B.) The method comprises adding a new disk drive image to a network server description for the network server through a host server operating system, the new disk drive image corresponding to the storage space to be linked and sending a dynamic linking request from the host server operating system to a network server operating system. (§ [0019] to [0023].) In response to the dynamic linking request, a device scanning request is sent from the network server operating system to the host server operating system. (§ [0025].) In response to the device scanning request, a response is requested from each device connected to each SCSI port of a host server and reporting the new disk drive image to the network server operating system. (§ [0026] to [0027].) Then, the new disk drive image is presented to users connected to the network server. (§ [0028].)

Another claimed embodiment provides a method for linking a storage space to an active server. (§ [0018] and Fig. 2A-B.) The method comprises adding a new disk drive image to a server description for the server, the new disk drive image corresponding to the storage space to be linked, and detecting changes on a SCSI bus indicating the new disk drive image corresponding to the storage space. (§ [0019] to [0023].) The step of detecting changes on the SCSI bus comprises sending a device scanning request from a device driver of a server operating system, and in response to the device scanning request, requesting a response from each device connected to each SCSI port of the server. (§ [0025] to [0026].) The new disk drive image is then reported to the device driver. (§ [0027].) Then, the new disk drive image is presented to users connected to the server. (§ [0028].)

Another claimed embodiment provides a method for linking a storage space to an active network server. (¶ [0018] and Fig. 2A-B.) The method comprises adding a new disk drive image to a network server description for the network server through a host server operating system, the new disk drive image corresponding to the storage space to be linked, the storage space residing on a storage device connected to a SCSI port of a host server. (¶ [0019] to [0023].) The new disk drive image is locked, and the open pointers of the storage space are stored. *Id.* A linking request is then sent from the host server operating system to a network server operating system. *Id.* In response to the linking request, a device scanning request is sent from a device driver of the network server operating system to a disk management program of the host server operating system. (¶ [0024].) In response to the device scanning request, changes on a SCSI bus of the host server are detected, a response is requested from each device connected to each SCSI port of the host server, and the new disk drive image is reported to the disk driver of the network server operating system. (¶ [0026] to [0027].) Then, the new disk drive image is presented to users connected to the network server. (¶ [0028].)

Grounds of Rejection to be Reviewed on Appeal

1. Claims 1-8 and 10-16 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Blumenau et al* U.S. Pat. No. 6,665,714, (referred to hereinafter as "*Blumenau*").

2. Claims 1-8 and 10-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable by *Blumenau*.

ARGUMENTS

1. The Examiner erred in rejecting claims 1-8 and 10-16 under 35 U.S.C. § 102(e) as being anticipated by *Blumenau*.

The Applicable Law

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

The References

Generally, *Blumenau* discloses a method and apparatus for managing the availability and assignment of data in a storage system that is coupled to a network. In the passages and the figures cited by the Examiner, *Blumenau* discloses a graphical user interface (GUI) via which a storage system may be linked to a host processor. In particular, the GUI provides respective icons which represent storage systems, storage volumes of a selected storage system, storage adapter ports, host processors and host bus adapters. A user may select the icons representing a particular storage volume and a host processor to be linked and select an action (i.e., from a pull-down menu) to add access by the host system to the selected storage volume.

The Examiner's Rejections

The Examiner states in the Final Office Action dated 12/16/2005 with respect to Claim 1 that:

"Blumenau teaches a method for dynamically linking a storage space to a network server, comprising:

adding a new disk drive image to a network server description for the network server through a host server operating system, the new disk drive image corresponding to the storage space to be linked (see col. 31 , lines 15 - col. 32 line 11, Blumenau discloses adding an image of storage device);

sending a dynamic linking request from the host server operating system to a network server operating system (see col.32 lines 11 - 50 and fig. 18, Blumenau discloses dynamic linking is selected through GUI);

in response to the dynamic linking request, sending a device scanning request from the network server operating system to the host server operating system (see col. 31 , lines 50 col. 32 line 11 Blumenau discloses the available devices);

in response to the device scanning request, requesting response from each device connected to each port of a host server and reporting the new disk drive image to the network server operating system(see col. 31 , lines 50 - col. 32 line 11 and fig. 19 Blumenau discloses identifying storage devices connected to a server); and

presenting the new disk drive image to users connected to the network server. (see col. 32, lines 51 - col. 32 line 17, and fig. 19 Blumenau discloses new disks image is added on the host server to allow access to selected storage device)."

The examiner cites similar sections of Blumenau with respect to independent claims 7 and 11.

Applicants' Argument

Blumenau does not disclose "each and every element as set forth in the claim". More particularly, *Blumenau* does not teach, show or suggest the steps performed by the host server operating system and by the network server operating system, respectively, in response to requests send to each other as claimed.

For example, *Blumenau* does not disclose adding a new disk drive image to a network server description for the network server through a host server operating system. The Examiner argues that *Blumenau* discloses such features at col. 31, line 15 to col. 32, line 11. However, the cited passage is in fact directed to a GUI which has expandable icons that may display existing storage volumes of a storage system. No

“new disk drive image” is added, and only existing storage volume icons are displayed by clicking on a storage system icon.

As another example, *Blumenau* does not disclose sending a device scanning request from the network server operating system to the host server operating system in response to a dynamic linking request. In this regard, the Examiner argues that *Blumenau* discloses showing the available devices. However, such available devices are merely icon displays of storage systems and associated storage volumes. No device scanning request is sent. Applicants submit that clicking on an icon to expand the icon is not equivalent to a device scanning request.

Furthermore, *Blumenau* teaches that the selections, such as clicking on an icon, are performed by a user, and does not teach, show or suggest that the steps are performed by the host server operating system and by the network server operating system in response to requests send to each other as claimed.

As another example, *Blumenau* does not disclose requesting a response from each device connected to each SCSI port of a host server in response to the device scanning request. The Examiner argues that *Blumenau* discloses identifying the storage devices connected to a server. However, the passages and figures cited by the Examiner are merely directed to a GUI showing the user selected components that are connected. *Blumenau* simply does not teach show or suggest requesting response from each connected device, particularly, in response to a device scanning request.

The Examiner's Response to Applicants' Arguments

The Examiner restated exactly, in the Advisory Action on page 2, the Examiner's “Response to Arguments” from page 7-8 of the Final Office Action dated 12/16/2005, which is directed toward Applicant's arguments with respect to the anticipation rejection. Particularly, the Examiner states that:

“In the remarks applicant argue in substance that A) *Blumenau* does not disclose steps performed by a host server and by network server in response to a request. B) does not disclose scanning request from the network server operating system to the host server operating system in response to a request.

In response to A) Blumenau discloses the host communicates with the disk drives in response to the user request (see col. 19 lines 10 - 30). In response to B) Blumenau discloses a user graphically connects a server to a host, in response to the connection request the host identifies all the disk devices connected to the host and the disks that the user has access to and presented to the user as shown in fig. 14 (see col. 21 line 60 - col. 22 line 28). Examiner interprets the identifying of the disks drives status and access privileges as 'response from connected devices in response to device scanning request'."

The Examiner appears to have no additional response directed to the arguments presented by the Applicants in the Response to Final Office Action filed on 02/16/2006.

Applicants Respectfully Submit that the Examiner's Response is Flawed

Firstly, Applicants respectfully submit that the Examiner has mischaracterized the steps recited in the claims as steps performed by a host server and by network server in response to any request, including requests from other components or the user, rather than in response to requests sent between the host server and the network server.

Furthermore, Applicant submits that the portions of the reference cited by the Examiner generally disclose a topology of a networked storage system and do not disclose the requests sent by and responses performed by the host server operating system and the network server operating system, respectively. The general communication in a networked environment as disclosed in *Blumenau* do not teach, show or suggest the requests sent and responses performed by the respective systems as claimed. More particularly, *Blumenau* do not teach, show or suggest:

"sending a dynamic linking request from the host server operating system to a network server operating system;

in response to the dynamic linking request, sending a device scanning request from the network server operating system to the host server operating system;

in response to the device scanning request, requesting a response from each device connected to each SCSI port of a host server and reporting the new disk drive image to the network server operating system."

Secondly, with respect to the Examiner's statement that "Blumenau discloses a user graphically connects a server to a host, in response to the connection request the host identifies all the disk devices connected to the host and the disks that the user has access to and presented to the user as shown in fig. 14 (see col. 21 line 60 - col. 22 line 28), Applicants respectfully submit that the Examiner has improperly interpreted the identifying of the disks drives status and access privileges as 'response from connected devices in response to device scanning request'" and that the Examiner has improperly interpreted the cited portions of the reference. The cited passages disclose a utility for "providing additional identification information pertaining to hosts and host/HBA pairs that are logged into a storage system." The cited passages do not disclose "sending a device scanning request from the network server operating system to the host server operating system;" and "in response to the device scanning request, requesting a response from each device connected to each SCSI port of a host server."

Applicants respectfully submit that the Examiner has not given due consideration to the relationships between the requests sent and the respective responses performed by the respective components.

Therefore, the claims are believed to be allowable, and allowance of the claims is respectfully requested.

2. The Examiner erred in rejecting claims 1-8 and 10-16 under 35 U.S.C. § 103(a) as being unpatentable over *Blumenau*.

The Applicable Law

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. See MPEP § 2142. To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one ordinary skill in the art to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP § 2143. The present rejection fails to establish any of these criteria.

The Reference

Blumenau, which is discussed above in more detail, generally discloses a method and apparatus for managing the availability and assignment of data in a storage system that is coupled to a network.

The Examiner's Rejection

The Examiner presents no specific arguments with respect to the obviousness rejection aside from the arguments made for the anticipation rejection.

Applicants' Response to the Examiner's Rejection

Firstly, the Examiner has not provided any analysis with respect to these obviousness rejections. Secondly, in view of Applicants' arguments above, *Blumenau* does not teach, show or suggest all of the claim limitations as claimed. Therefore, Applicants respectfully submit that the Examiner has failed to satisfy the initial burden of establishing a *prima facie* case of obviousness.

The Examiner Appears to Provide No Response to Applicants' Arguments

In the Advisory Action on page 2 the Examiner restated exactly the Examiner's "Response to Arguments" from page 7-8 of the Final Office Action dated 12/16/2005, which is directed toward Applicant's arguments with respect to the anticipation rejection. Accordingly, the Examiner appears to have no response directed to the arguments presented by the Applicants in the Response to Final Office Action filed on 02/16/2006 with respect to the obviousness rejection under 35 U.S.C. § 103(a).

Applicants Respectfully Submit that the Examiner's Response is Defective

Respectfully, Applicants submit the Examiner's rejection is defective and should be withdrawn.

CONCLUSION

The Examiner errs in finding that claims 1-8 and 10-16 are anticipated by *Blumenau* under 35 U.S.C. § 102(e) and in finding that claims 1-8 and 10-16 are unpatentable over *Blumenau* under 35 U.S.C. § 103(a). Withdrawal of the rejections and allowance of all claims is respectfully requested.

Respectfully submitted, and
S-signed pursuant to 37 CFR 1.4,

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CLAIMS APPENDIX

1. (Previously Presented) A method for dynamically linking a storage space to a network server, comprising:
 - adding a new disk drive image to a network server description for the network server through a host server operating system, the new disk drive image corresponding to the storage space to be linked;
 - sending a dynamic linking request from the host server operating system to a network server operating system;
 - in response to the dynamic linking request, sending a device scanning request from the network server operating system to the host server operating system;
 - in response to the device scanning request, requesting a response from each device connected to each SCSI port of a host server and reporting the new disk drive image to the network server operating system; and
 - presenting the new disk drive image to users connected to the network server.
2. (Original) The method of claim 1, further comprising:
 - locking the new disk drive image and storing open pointers of the storage space prior to sending the dynamic linking request.
3. (Original) The method of claim 1 wherein the storage space resides on a storage device connected to a SCSI port of a host server.
4. (Original) The method of claim 1 wherein the device scanning request is sent from a device driver of the network server operating system to the host server operating system.
5. (Original) The method of claim 4 wherein a disk management program on the host server operating system requests response from each device connected to each

SCSI port of a host server and reports the new disk drive image to device driver of the network server operating system.

6. (Original) The method of claim 1 wherein the storage space includes existing data.

7. (Previously Presented) A method for linking a storage space to an active server, comprising:

- adding a new disk drive image to a server description for the server, the new disk drive image corresponding to the storage space to be linked;

- detecting changes on a SCSI bus indicating the new disk drive image corresponding to the storage space, wherein detecting changes on the SCSI bus comprises:

 - sending a device scanning request from a device driver of a server operating system;

 - in response to the device scanning request, requesting a response from each device connected to each SCSI port of the server; and

 - reporting the new disk drive image to the device driver; and
 - presenting the new disk drive image to users connected to the server.

8. (Original) The method of claim 7, further comprising:

- after adding the new disk drive image, locking the new disk drive image and storing open pointers of the storage space.

9. (Canceled)

10. (Original) The method of claim 7 wherein the storage space includes existing data.

11. (Previously Presented) A method for linking a storage space to an active network server, comprising:

adding a new disk drive image to a network server description for the network server through a host server operating system, the new disk drive image corresponding to the storage space to be linked, the storage space residing on a storage device connected to a SCSI port of a host server;

locking the new disk drive image and storing open pointers of the storage space;

sending a linking request from the host server operating system to a network server operating system;

in response to the linking request, sending a device scanning request from a device driver of the network server operating system to a disk management program of the host server operating system;

in response to the device scanning request, detecting changes on a SCSI bus of the host server, requesting a response from each device connected to each SCSI port of the host server and reporting the new disk drive image to the disk driver of the network server operating system; and

presenting the new disk drive image to users connected to the network server.

12. (Original) The method of claim 11 wherein a disk management program on the host server operating system responds to the device scanning request.

13. (Original) The method of claim 11 wherein the storage space includes existing data.

14. (Previously Presented) The method of claim 1, wherein the new disk drive image is created as a file which is equivalent in size to the storage space to be linked.

15. (Previously Presented) The method of claim 7, wherein the new disk drive image is created as a file which is equivalent in size to the storage space to be linked.

16. (Previously Presented) The method of claim 11, wherein the new disk drive image is created as a file which is equivalent in size to the storage space to be linked.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.